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INSTITUTIONAL REFORMS AND SPATIAL EVOLUTION OF THE BANKING SYSTEM IN HENAN, CHINA SINCE 1978*

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Recent rapid institutional reforms in the financial sector and fast economic growth make China a special case for studying the spatial evolution of banking system in the particular circumstances. Drawing on data from China's four big state-owned banks in the nation's largest less-developed, yet rapidly growing interior province of Henan, this paper reveals that the spatial evolution of the regional banking system did not follow the "stages of banking development" theory developed in the literature. The regional banking system started from a fairly even spread of national bank branches and moved towards a geographical concentration in the urban centers. Institutional reforms, particularly government deregulation and bank re-organization played a crucial role in driving the changes. Along with diminishing government controls, spatial economic difference directly determined the locations of bank branches. This was proved at high significance levels in the pooled OLS and Fixed Effect regression models. The questionnaire interviews with 58 bank branches further supported the findings. We argue that the different banking practices in the specific institutional background of China may extend the "stages of banking development" theory based on evidence from the Western economies.

Key Words: *Regional Financial System, Bank Locations, Institutional Reform, China, Henan.*

INTRODUCTION

Financial geography has long focused on global and national issues, such as globalization, international or national financial centers, and national financial systems (Porteous, 1995; Leyshon and Thrift, 1997; Martin, 1999a; Clark, 2005). Theoretical and empirical work on geographical studies of

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sub-national financial systems is limited. The few exceptions in sub-national studies draw exclusively on evidence from the developed economies, either focusing on the metropolitan areas (Polese and Shearmur, 2004; Marshall, 2004; Zhao et al., 2004), the regional inequality of financial services (Klagge and Martin, 2005; Martin et al., 2005), or the financial practice relevant to the local economy (Lee, 1999; Tickell, 2000). Yet the relevant issues in the less developed economies, particularly in the less developed regions in these nations, remain one of the least explored aspects in financial geography.

Based on evidence from the developed economies, many researchers have observed the increasing institutional and geographical concentration of the financial system (e.g., Martin, 1999a; Klagge and Martin, 2005), although differences still exist among nations (Carnevali, 1996; Tickell, 2000). Some scholars have developed a "stages of banking development" theory to illustrate the spatial evolution of the financial system (Chick, 1986; Dow, 1999). Starting from local and regional banking, this evolution is moving towards centralization in global centers (Martin, 1999b). Underlying these stages, the trends of development are both geographical expansion of some individual banks and concentration of banking services in some localities. This may be true from the perspective of historical evolution in a market economy. But the situation may differ in some special contexts. For example, due to the special roles played by state regulations, banking development in the transitional economy may not closely follow the tendencies identified.

China is a transitional economy which has experienced rapid institutional changes in its banking system since economic reforms commenced in 1978. In the traditional planned economy, financial operation and management were highly centralized. One state-owned bank, the People's Bank of China (PBC), controlled money supply, and managed all banking and savings activities. More importantly, PBC had a planning function, serving as the accounting agency for the whole planned economy. Thus, the bank branches at various levels corresponded and adhered to the hierarchies of government administration. Since 1978, and especially since the early 1990s, market-oriented reforms of state-owned banks (SOBs) have taken place in China. At the first stage of this process, four specialized SOBs, namely the Agricultural Bank of China (ABC), the Bank of China (BOC), the Industrial and Commercial Bank of China (ICBC) and the Construction Bank of China (CBC), were established between 1979 and 1985. After the separation of their commercial functions, the PBC became the nation's central bank. Along with government relinquishment of direct control over the financial industry and relaxation of restrictions on new entrants in the early 1990s, the SOBs have been granted greater autonomy and have been gradually

transforming into true commercial banks. The division of financial services among the four specialized banks has diminished. Other financial institutions, such as joint-stock banks, city commercial banks and private banks, have also emerged. Thus, to strengthen their competitiveness, the state banks have been working to reorganize and re-engineer themselves, with stress on being customer-oriented, restructuring traditional organization and improving their business processes (Chen and Shih, 2004).

Several other factors also characterize the operational background of Chinese banking system. First, the state-owned national banks still dominate the banking system in China. The four big SOBs (ICBC, ABC, BOC, CCB), are the mainstay of the country's banking sector. Although their dominance is declining, in 2004 they still held a combined share of 54 per cent of total banking assets, 60 per cent of the total domestic lending market, and attracted 69 per cent of all deposits in the national banking sector (Financial Society of China, 2005). Second, China has a large regional disparity in its economic development. Some less developed regions have recently experienced very fast growth, while other relatively well developed regions have grown only slowly (Lu and Sit, 1997). These changing patterns of regional economic development may have affected the regional banking system. Third, foreign financial firms have gradually been permitted to establish their subsidiaries in China following its accession to the World Trade Organization (WTO) (Ministry of Foreign Trade and Economic Cooperation, 2002). However, these foreign banks have operated in only a few designated urban districts in the coastal cities. The large inland areas were not directly affected by foreign banks until regional restrictions were lifted in late 2006. Fourth, the technology adopted in the Chinese banking industry is less advanced than that in developed countries, although equipment has improved significantly in recent years (Chen and Tang, 2003). Internet and telephone banking is still not popular among Chinese customers.

Against this unique background, this paper attempts to examine the spatial evolution of regional banking systems in China. In particular, it aims to explore how the banking system has responded to rapid institutional reforms in the banking industry. In doing so, we select the less developed but fast growing and large interior province of Henan as a study case. The weak influence of globalization on this province and its relatively low level of economic development provide a good case to test the impacts of institutional reforms on the early stages of evolution in its banking system. By using data collected from Henan, the following specific questions will be investigated: What is the changing geography of the banking system in a

less developed area of a developing country? Will it follow the stages theory based on evidence from the developed economies? What are the major determinant factors behind the changes? What roles can institutional reforms play in determining the pattern of a regional banking system?

The remainder of the paper is divided into six sections. The next section discusses the research frameworks used in the study, stressing the role of institutions and institutional changes in shaping the financial system and the stages of banking development. Section Tree elaborates on the selection criteria for the case study area and data collection. Section Four examines the spatial evolution of the banking system in the study area. The next two sections present respectively a quantitative and a qualitative analysis of factors which determined these spatial changes. The final section brings the paper to its conclusions.

THEORETICAL FRAMEWORKS

Institutional changes and the regional banking system

A banking system can be examined at different geographical scales, such as the local, the regional, and the national. In this paper, however, we define a regional banking system as the spatial structure of subsidiary banking units (such as branches) in a sub-national region. Many factors may affect the formation and evolution of a regional financial system, including the income levels of local residents (Corbridge and Thrift, 1994), the status of economic growth, the difference in information availability (Porteous, 1995 and 1999), government regulation policies, technological changes in the banking sector, globalising processes (Martin, 1999b), and social, cultural and institutional factors (Thrift, 1994). All factors have their influences; notwithstanding, some factors may play more significant roles in a specific context. For example, the rapid institutional changes in China's banking industry since 1978 may have played a special role in determining the banking system in relevant regions.

Institutions can be defined in various ways. In most cases, institutions refer to the agents that provide financial services, such as bankers, stock exchanges and so forth in financial geography (Martin, 1999b). But in institutional economics, institutions are rules of the game. They are made up of formal constraints (such as constitutions, laws, rules and regulations), informal constraints (such as norms of behavior, conventions, self-imposed codes of conduct), and their enforcement characteristics (North, 1994). Since informal constraints are unlikely to change in the short-term, we use the

term institutions in a specific sense in this research, including financial institutions and government regulations for the banking sector. Institutional changes therefore refer to changes in government regulations and institutional re-organization in response to the changes. We consider that government and financial institutions are two important aspects of institutional reforms in the banking sector.

Institutions and their transformation play significant roles in shaping the regional banking system. The different financial functions and institutional forms have different locational patterns; some tend to be widely distributed, such as retail banking, while others are more spatially concentrated, such as bank headquarters. In addition, different financial institutions may also have different spatial organization. For example, banks with a national branch system differ significantly from those with local or regional banking systems in relation to a particular region. The latter tend to be more rooted in, and committed to, the local community than do the local branches of national banks (Martin, 1999b). To adjust to various types of competition, the organizational transformation of banks occurs frequently. This may result in changes in bank's locational structure as well as in the regional banking system.

No financial institutions can operate entirely in their own interests; they are subject to government policies and regulations. Government policies and regulations may affect the regional banking system in many aspects. Firstly, they may promote or restrict the overall growth of the banking industry in a particular region. For example, government preferential policies may promote growth of financial centers in some countries (Clark, 2002); government regulation on prohibiting establishment of inter-regional banking branches (Odell, 1992) may restrict development of financial industry in peripheral areas. Secondly, the changes of relevant regulations may result in regional reorganization of the banking system. This can be seen in some countries with a localized banking tradition, such as the United States, Germany, France, and Italy. Recent deregulation there has resulted in significant changes in financial systems (Carnevill, 1996; Martin, 1999a). Thirdly, some special policies may improve the uneven distribution of financial services. For instance, the Community Reinvestment Act in the United States has provided a strong incentive for financial institutions to develop services in the areas with financial exclusion. Similar policies have also been initiated in Britain to improve access to financial services in deprived urban areas (Marshall, 2004).

These general estimations shed light on exploring the special case under the different background. But relevant literature does not cover the impact

of rapid institutional changes on regional banking systems. The dramatic changes from tightly-governmental control to following market principles in China's banking industry since 1978, for example, needs a specific exploration. As discussed earlier, in the tightly-planned period, banks were actually the accounting departments of the central government. Thus, government preference should determine regional patterns of the banking system. Alongside the transition to a market economy, institutional changes may likely have affected the regional banking system in the following special ways. (1) Government deregulation has created a new operational environment for financial institutions. The SOBs are gradually being converted into truly independent financial entities. Being guided by market-based principles of finance rather than following instructions from governments, the banks should have undergone many changes in locational structures. (2) The release of government's direct control over the financial industry has generated establishment of other kinds of financial institutions, such as joint-stock banks, city commercial banks, credit cooperatives, and private banks. Thus, the regional banking system may have become diversified. (3) To survive from the strong competition with other banks, the SOBs should have been restructuring their inefficient organizational hierarchies that were inherited from the planned economy.

Under these circumstances, one important assumption needs to be tested. The market force has replaced government control as a dominant factor in regional banking development. With acceptance of this assumption, following changes in the spatial organization of individual banks and the regional banking systems should have presumably occurred. (1) Bank locations should change from a significant difference from where they should be in the market economy to somehow reflect the market rules after the progressive liberalization of the economic system in 1978. (2) Relatively even distribution of bank branches among the administrative units should be observed in the planned period, while a centralization tendency may appear after 1978 to pursue the large pool of banking customers in particular locations. (3) Many new banks and bank branches should be established to meet the needs of regional economic development. Thus, the regional difference of banking services may increase in the study period. These presumptions will be tested in the case of Henan province.

The stages of spatial development of banking systems

Some scholars have developed a framework to describe spatial patterns of banking development. Based on the view that any banking system is a

product of history and evidence from UK, Chick (1986) introduced a "stages of banking development" theory to reveal the underlying logic in banking development. Dow (1999) further developed the spatial composition of the stages of banking development. The six stages of banking development and their spatial implications can be summarized as (1) serving local communities, (2) market expansion at regional level, (3) development of the banking system at national level, (4) development overseas, (5) competition at national level with non-bank financial institutions and concentration of financial activity in particular national centers, and (6) international competition and concentration in global financial centers (Dow, 1999).

Though different banking systems may go through stages differently, each regional or national banking system develops according to a common logic. That is in the market economy, bank evolves to meet the needs of traders, borrowers and lenders. Either geographical expansion of individual banks or concentration of banking services in some localities is a process whereby the banks increase their market capacity. The particular behavioral and institutional framework within which the government regulates the banking system also plays an important role.

How is the situation if, under the special circumstances, the banks develop by following government preference rather than market rules? How will the dramatic institutional changes affect the stages of banking development? For example, in the traditional planned economy, government tightly controlled financial institutions; the purpose of bank's operation was mainly to provide public services. Institutional reforms since 1979 have encouraged banks to move towards the common logic of bank operation in the market economy. Some other background may also affect the stages of banking development in China. (1) The history of banking development is very short. There were only few bank branches in China's inland regions before 1949 (Zhang, 1957). (2) The national branch system was the tradition in China's banking development. Even before 1949, few national banks and foreign banks dominated the country's banking service (Zhang, 1957). The situation continued afterward although some local banks have been established recently. Will these specialties produce a different outcome in stages of spatial development of the regional banking system? This will be explored in the following study.

RESEARCH AREA AND DATA

Henan Province is located in the central part of China, and is the nation's largest province in terms of population (93 million in 2005) and the largest

inland province in terms of economic size (RMB 855.4 billion yuan of GDP in 2004, with one US dollar equivalent to RMB 8.06 yuan, the only inland province among the national top five provinces in GDP). We selected this province to examine the spatial changes in the banking system for the following reasons. Firstly, its economic development maintained a low level by national standards. The province's per capita GDP was 7570 yuan in 2003, in the lower medium range of the nation's 31 provinces and municipalities (National Bureau of Statistics of China, 2004). Secondly, its global influence remained relatively weak. For example, both its foreign direct investment and its total value of international trade as proportions of GDP were the lowest among the six central Chinese provinces in 2003 (National Bureau of Statistics of China, 2004). Thirdly, Henan was an important destination for state investment under the planned economy. Even in 2003, the state-owned sector still contributed 54.4 per cent of its total GDP, compared with 44.9 per cent for the national average and 25.2 and 19.5 per cent in coastal Guangdong and Zhejiang Provinces respectively (National Bureau of Statistics of China, 2004). Finally, its economic growth rates have been very high in past few years. The annual average GDP

TABLE 1. THE SHARES OF THE FOUR BIG SOBS IN THE TOTAL OF BANKING INDUSTRY IN HENAN PROVINCE IN 2002~2003 (RMB million yuan, %)

Banks	2002		2003		2002		2003	
	Assets	% of the total	Assets	% of the total	% of deposits	% of lending	% of deposits	% of lending
ABC	112761	14	120482	12	17	17	17	17
BOC	69758	9	81765	8	9	7	10	7
CCB	87684	11	100128	10	14	8	13	8
ICBC	140715	18	155132	15	22	18	20	17
Four State-owned Banks	410918	52	457507	45	62	50	60	49
Joint-stock banks	82934	11	130347	13	13	9	15	12
Other financial institutions	289479	37	426307	42	25	41	25	39

Notes: 1) ICBC, BOC, ABC and CCB refer to Industrial and Commercial Bank of China, Bank of China, Agricultural Bank of China and China Construction Bank respectively.

2) The joint-stock banks include Bank of Communications, CITIC Industrial Bank, China Everbright Bank, China Merchant Bank, Pudong Development Bank. Other financial institutions include city commercial banks, city credit unions, rural credit unions, and national policy banks (Agricultural Development Bank, National Development Bank).

Sources: Jinan Branch of Chinese People's Bank, 2003, 2004: Yearbook of Jinan Branch of Chinese People's Bank 2003, 2004. Beijing: China Financial and Economic Pres

growth rate from 1996 to 2003 in the province was 13.1 per cent, much higher than the national average (National Bureau of Statistics of China, 1999; 2004). Henan is therefore a good case for testing the impact of institutional reforms on the regional banking system in the less developed areas of China.

The four big SOBs hold a similar dominant position in Henan as in the country as a whole. The total assets of the four banks amounted to 457 billion yuan in 2003, or 45 per cent of the total financial sector of the province, albeit a slight decline from its share of 52 per cent in 2002. The total lending of the four banks was 49 per cent while the total deposits were over 60 per cent of the provincial total in 2003 (Table 1).

Statistical data on the banking industry in China only cover those at national or provincial levels. Regional and systematic data in a relatively long period are rarely available. Therefore, we collected data in this research from the following sources. (1) We visited the Henan Banking Regulatory Bureau and collected detailed data about the branches of the four big stated-owned banks from 1949 to 2003. We also talked with the senior administrators of the Bureau and learned about the development background of the banking industry in Henan Province since 1949. (2) We then interviewed the senior officials from the four banks' head offices in Henan Province respectively in July and December 2004. Particular attention was paid to the organizational changes in their banking systems, and the criteria for determining the location of their branches. (3) By reference to the above information, we sampled bank branches for surveying. In July 2004, 50 branches of the four banks in Zhengzhou city, the capital of Henan Province, were randomly selected. This represented 12 percent of the total branches of the four banks. On the basis of operation duration and spatial concentration, eight branches in three concentration

TABLE 2. SAMPLE BRANCHES OF THE FOUR BIG SOBS IN ZHENGZHOU, HENAN PROVINCE

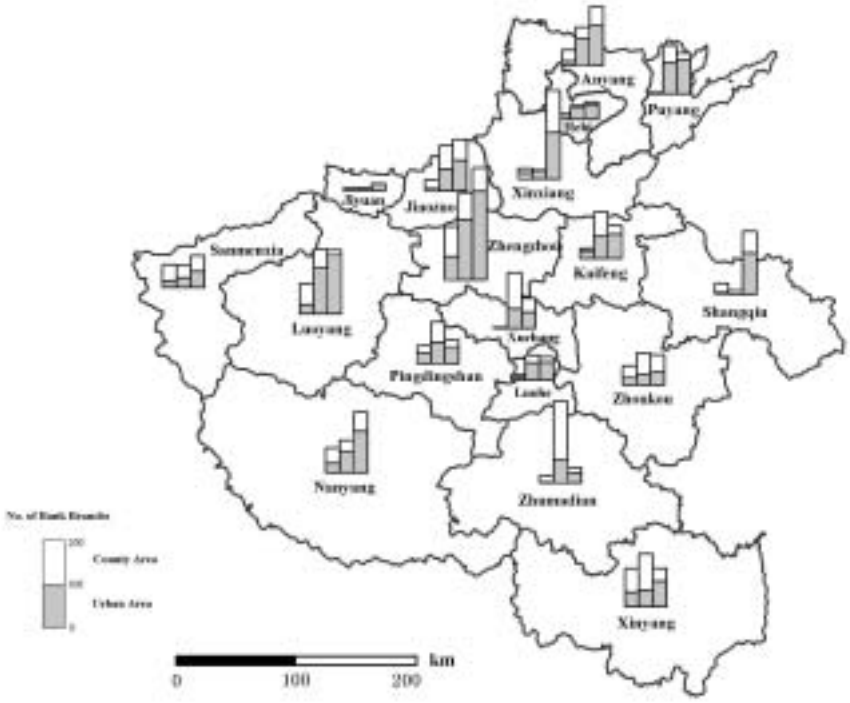
Banks	Total Branches	Samples	%
ICBC	143	20	14.0
ABC	105	13	12.4
BOC	68	11	16.2
CCB	107	14	13.1
Total	423	58	13.7

Notes: See table 1 for the full names of the abbreviations of the four bank.

areas were further added to the samples. The sample branches and their representation were summarized in Table 2.

In July and August 2004, by the assistance of our postgraduate students we surveyed the samples with a pre-designed survey form. The form included basic information on a branch and the questions regarding its location selection, operational problems, and main targeted customers. The people who were surveyed were mostly the managers of the branches. For the branches established before 1978, we also interviewed the ex-managers of the branches. The data from the surveys provided important qualitative accounting for the changes in the banking system in the study area.

The data on all the branches of the four banks in Henan Province, as well as the city of Zhengzhou, were spatially processed by using ARCGIS software. This has resulted in several maps illustrating the spatial evolution of banking system in the whole province as well as in the capital city (Fig. 1,



Source: Authors' collection from the relevant government authorities.
Note: The bars from left to right in order represent the period 1979~1985, 1986~1992, and 1993~2003.

FIGURE 1. LOCATIONS OF FOUR STATE-OWNED BANKS IN HENAN PROVINCE IN THREE PERIODS OF 1979~1985, 1986~1992, AND 1993~2003.

Fig 3). The data were also used for the quantitative analysis. The quantitative and qualitative results are supplementary to each other, providing support for our arguments in the study.

THE CHANGING GEOGRAPHY OF BANKING SYSTEMS IN HENAN

In terms of institutional structure, the banking system in China has undergone four periods since 1949. They are (1) the period of the highly centralized financial system (1949~1978); (2) the period of the establishment of four SOBs (1979~1985); (3) the period of the specialized banking system (1986~1992) which was dominated by the four specialized state banks; and (4) the period of the commercialized banking system (1993~) during which the specialized banks were switched to commercial banks while other types of banks were emerging. The four periods were used in the following spatial analysis on development trends of the banking system in Henan Province.

Firstly, the banking system in the province started from national bank branches. The local banks were not established until the early 1980s. The first state-owned bank (PBC) in Henan province was established in 1951. During the centralized period, PBC acted as a public service organization. Its branches were bound to the governments at provincial, prefecture and county levels. Along with the reforms, the networks of the banking system became denser and complicated over time. The SOBs added 8 branches annually in 1951~1978, but 228 in 1986~1992. Despite the competition with the newly established joint stock banks and private banks since 1993, the annual increase in the branches of the four banks remained high (163).

Secondly, bank branches tended to be concentrated in urban centers. For example, the newly established branches of the four big SOBs in the capital city and prefecture-level cities combined to account for 30.2 per cent in 1951~1978, 33.8 per cent in 1979~1985, 51.1 in 1986~1992 and 68.3 per cent in 1993~2003, of the provincial total (Table 3). By contrast, the counties and county-level cities suffered a decline from 69.8 to 31.7 per cent in the two periods respectively (Table 3). The changing patterns implied that central cities become more important in the regional banking system.

Thirdly, regional differences in banking service were enlarging. The SOBs were almost evenly distributed among the counties before 1978, with one bank branch per county regardless of its population or economic size. The situation among the prefecture-level cities was similar except that a few large cities hosted slightly more branches. But after 1979, the difference between prefectures was enlarged in terms of the number of bank branches. For instance, the total branches of the after 1979, the difference between

TABLE 3. LOCATIONS OF THE NEW BRANCHES OF THE FOUR BIG SOBS IN HENAN PROVINCE IN 1951~2003 (No. %)

	1951~1978	1979~1985	1986~1992	1993~2003
The capital City	35(15.5)	46(7.0)	136(8.5)	206(11.5)
Prefecture-level urban centers	33(14.7)	176(26.8)	681(42.6)	1018(56.8)
Counties	157(69.8)	435(66.2)	782(48.9)	567(31.7)
Total	225(100.0)	657(100.0)	1599(100.0)	1791(100.0)

Note: In current Chinese administration system, under the province is the prefecture-level city, which is further divided by the county or the county-level city. Prefecture-level urban centre in the table refers to the administrative centre or the main urban centre of a prefecture-level city. County in the table includes county-level city.

Source: Authors' collection from the relevant government authorities.

prefectures was enlarged in terms of the number of bank branches. For instance, the total branches of the four banks in Luoyang were 387, or 4.7 times the number in Hebi. In terms of population, the branches per million people in Sanmenxia and Jiaozuo were 80 and 78 respectively, while those in Shangqiu and Zhoukou were only 22 and 23 (Fig. 1). These regional differences were largely related to their economic development, which will be demonstrated in the following quantitative analysis.

In summary, the changing geography of banking system in Henan Province did not follow the "stages of banking development" theory based on the practice in some western economies. Although the geographical concentration was observed, the regional banking system did not start from local or regional banks. With reference to Dow's six stages framework, the spatial development of the banking system in Henan since 1949 can be defined in two stages. The first one is the stage of even distribution of national branch banking system (1949~1978). The second is the stage of competition with other local or regional banks (such as city commercial banks, joint stock, and private banks) and concentration of banking services in urban centers (1979~2006).

QUANTITATIVE ANALYSIS ON THE DETERMINANT FACTORS

As discussed earlier, the SOBs were regarded as public service organizations during the planned economy (1951~1978). Thus, banks did not set up branches based on the rationality of market principles in financial operation. Instead, the distribution of the administrative units in the

government hierarchy overwhelmingly determined the regional distribution of the bank branches. We may call this the "government decision effect" or "administration-bound effect" (bank branches were bound with administrative units). After 1979, China has gradually released government controls on SOBs. To make profit has been emphasized as a major goal of the SOBs in operation. As many Chinese banks conduct their business mainly in deposit-taking and credit-lending (He, 2001), therefore, *ceteris paribus*, the profit-seeking banks would be expected to locate branches in line with income and economic growth. If GDP can be used to indicate both the income and economic levels in a region, then regional GDP may presumably determine the number of bank branches in the region. We may call this the "marketing effect" or "regional economy-bound effect."

To test the contribution of "administration-bound effect" and "regional economy-bound effect" discussed earlier, we have used the panel data on GDP by prefecture-level regions in Henan Province (the administrative units under the province were prefectures or prefecture-level cities in the study periods) in the three years (1985, 1992 and 2003) from the *Statistical Yearbook of Henan* and the panel data we have collected on the total branches of the four SOBs in the three periods (1949~1985, 1986~1992 and 1993~2003) for the same regional basis. We have then applied the pooled OLS and Fixed Effect methods to estimate the econometrical models discussed above. The work has been processed by the software package Eviews. The following model has been formulated for doing the pooled OLS:

$$N_{it} + \beta_0 + \beta_1 Y_{it} + \beta_2 A_{it} + \beta_3 D_{03} Y_{it} + u_{it} \quad (3)$$

Where N_{it} is the number of branches of the four big SOBs in year t and region i; N_{it} is the GDP for region i in year t, A_{it} is the number of county-level administration units in region i (there were 5 to 15 counties, county-level cities or county-level districts in each prefecture-level region in the study periods) and year t; D_{03} is a dummy variable, which equals 1 for 2003, and zero for 1985 and 1992. The reason for us to add this dummy variable is that, other banks besides the four big SOBs have entered into the banking industry since 1992 and they contributed a substantial portion in the banking industry in 2003.

From the estimated results (Table 4) of Model (3), we can draw two important conclusions. Firstly, the determinant factors changed in the study period. After 1985, the GDP had significant effect on the distribution of bank branches (the t statistic for Y is large enough), and the administration units had not significant effect on the branch distribution of banks (the t statistic

TABLE 4. REGRESSIONRESULT (1) FROM THE POOLED OLS MODEL
(Dependent variable: N, Included observations: 54)

Explanatory variables	Coefficients	t-statistic	p-value
C	5.512170	0.305534	0.761
Y	1.458452	6.384285	0.000
A	2.043982	0.987717	0.328
$D_{03}Y$	-0.948898	-4.570662	0.000
R^2=0.849278		F=93.91214	

TABLE 5. REGRESSION RESULT (2) FROM THE POOLED OLS MODEL
(Dependent variable: N, Included observations: 54)

Explanatory variables	Coefficients	t-statistic	p-value
C	19.65033	1.789853	0.079
Y	1.574200	8.029594	0.000
$D_{03}Y$	-1.047130	-5.747459	0.000
R^2=0.846337		F=140.447	

for A is small enough). The economy-bound effect replaced the administration-bound effect. Secondly, the strength of the impact also changed in the period. After 1992, the GDP had a significant effect on the number of bank branches, but the strength of the impact was declining (the t statistic for $D_{03}Y$ reflects this fact).

We may remove the administration units as an independent variable since its effect is not significant. Then we obtain the estimated outcome in Table 5, as well as the estimated equation (4) for 1985 and 1992 and (5) for 2003. These two equations indicates that in 1985 or 1992, the SOBs would increase 1.6 branches on average for the GDP increment of RMB 100 million yuan; however, in 2003, they would increase only 0.5 branch on average for the same increment of the GDP. This was largely attributable to the entries of other banks besides the four banks that effectively competed with the four SOBs.

$$N = 19.7 + 11.6Y \tag{4}$$

$$N = 19.7 + 11.5Y \tag{5}$$

TABLE 6. REGRESSION RESULT FROM THE FIXED EFFECTS MODEL

(Dependent variable: ΔN, Included observations: 54)

Explanatory variables	coefficients	t-statistic	p-value
Y	1.816892	10.04108	0.000
A	-2.691692	-0.406377	0.686
$D_{03}Y$	-1.525994	-8.269501	0.000
R^2=0.510161		$\overline{R}^2$=0.49095	

Note: The number of observations should be reduced after differentiation. However, we add the data in 1978 here. The differential data reflect the changes after 1978.

The pooled OLS model produces R^2=0.85, which indicates our model fits very well the observed values. However, to avoid the errors from missing important explanatory variables, we add an unobservable F_i into Model (3). This variable is sensitive by regions but constant over periods. Then, Model (3) becomes:

$$N_{it} = \beta_0 + \beta_1 Y_{it} + \beta_2 A_{it} + \beta_3 D_{03} Y_{it} + F_i + u_{it} \quad (6)$$

Differentiate Model (6) with respect to time t:

$$\Delta N_{it} = \beta_1 \Delta Y_{it} + \beta_2 \Delta A_{it} + \beta_3 D_{03} \Delta Y_{it} + \Delta u_{it} \quad (7)$$

We use OLS to estimate Equation (7) and obtain the outcome of fixed effect model (Table 6). This outcome further validates our first conclusion; the t-statistics for ΔY and ΔA show that the effect of the regional economy is significant but that of administration units is not significant. It also makes the second conclusion clearer; when $D_{03} = 1$, ΔY represents the difference in GDP between 2003 and 1992, the t-statistic for $D_{03}\Delta Y$ reflects the declining in the strength of the effect of the regional economy.

EVIDENCE FROM THE INTERVIEWS

In the survey form we listed ten locational factors based on information from our interviews with people in the head offices of the four big SOBs. During the survey we asked the interviewees to assess the significance levels of the factors in affecting their branches' location. The assessment was designed to have five categories — the most important, very important,

important, ordinary and irrelevant. Among the ten factors, "development policy" and "government decision" are related to government preference, while others mainly reflect market principles. Results from 58 sample branches were used to test whether bank locations followed government's preference or market rules.

Survey results indicate that "transportation," "resident's income level," "proximity to residential areas" and "proximity to big companies, government and non-government organizations" were evaluated as important factors in determining the bank branch's location. Those assessing the factors as the most important and very important combined counted for 79.3, 61.2, 56.9 and 46.6 per cent in the total samples respectively (Table 7). Obviously, all these factors are directly related to the number and business capacity of bank customers, except "transportation" factor that affects the accessibility of customers. Public transportation has been the dominant means of transportation in China.

By contrast, "development policy" and "government decision" had weak influence on location selection. Those assessing the factors as irrelevant counted for 43.1 and 60.3 per cent in the total samples respectively (Table 7). Government "development policy" only affected several branches in the newly developing districts; thus, its overall assessment was reasonably low. Similarly, since those established in the rigorous planned economy only

TABLE 7. ASSESSMENT OF LOCATION FACTORS BY THE SAMPLES IN THE FOUR BIG SOBS IN ZHENGZHOU (N = 58)(%)

Locational factors	Irrelevant	Ordinary	Important	Very important	Most important
Transportation	5.2	5.2	10.3	53.4	25.9
Rent and labor cost	5.2	44.8	25.9	18.9	5.2
Space availability	18.9	31.0	25.9	20.7	3.5
Proximity to big companies, government and non-government organizations	10.3	31.0	12.1	25.9	20.7
Resident's income level	8.6	13.8	15.5	17.3	44.8
Proximity to commercial centers and recreation sites	22.4	20.6	19.0	5.2	32.8
Development policy	43.1	17.3	13.7	17.3	8.6
Following others	70.7	12.1	6.9	10.3	0
Government decisions	60.3	17.2	5.2	12.1	5.2
Proximity to residential areas	15.5	12.1	15.5	22.4	34.5

Note: Figure in the table is the percentage of each category in one factor.

accounted for a small share in the samples as well as in the total branches, the impact of "government decision" on the branch's locations in general was also very weak.

Since the operational environment have remarkably changed in the past half century, it will be necessary to analyze the influence of locational factors against the changing background. The results become more striking after we have broken the data into three periods, 1951~1978, 1979~1992 and 1993~2003 (Table 8). Some factors were constantly significant in the three periods, while others playing different roles over periods.

"Transportation" was regarded as a very important locational factor in the entire three periods. Those assessing the factor as the most important and very important counted for 80.0, 82.6, and 76.7 per cent of the total samples in the three periods respectively (Table 8). Some other factors are highly sensitive to the changes in operational environment of banking service. For example, "resident's income level" became an important locational factor only after China's reforms in 1978. Those assessing the factor as the most important and very important were zero in 1951~1978, but increased to 65.2 and 56.7 per cent of the total samples in 1979~1992 and 1993~2003 respectively (Table 8). This reflects the importance of market force in determining bank locations after the banks changed from

TABLE 8. LOCATIONAL FACTORS AND THEIR IMPORTANCE ASSESSED BY THE SAMPLES IN THE FOUR BIG SOBS IN ZHENGZHOU IN THREE PERIODS (N=58)(No, %)

Locational factors	1951~1978		1979~1992		1993~2003	
	No.	%	No.	%	No.	%
Transportation	4	80	19	82.6	23	76.7
Rent and labour cost	1	20	4	17.3	9	30.0
Space availability	0	0	6	26.1	8	26.7
Proximity to big companies, government and non-government organizations	1	20	10	43.3	16	53.3
Resident's income level	0	0	15	65.2	17	56.7
Proximity to commercial centers and recreation sites	1	20	9	39.1	12	12.4
Development policy	1	20	5	21.7	9	30.0
Following others	1	20	5	21.7	4	13.4
Government decisions	4	80	3	13.4	3	8.7
Proximity to residential areas	2	40	16	69.6	15	50.0

Note: No. in the table refers to the number of sampling bank branches that assessed the respective factor as the most important and very important factors. The percentage was calculated by the No. as percentage of the total samples in the respective period.

government organizations to commercial entities. For the same reason, "government decisions" as a locational factor was remarkably diminishing in the three periods. Those assessing the factor as the most important and very important counted for 80 per cent of the total samples in 1951~1978, declining to 13.4 per cent in 1979~1992 and 8.7 per cent in 1993~2003 (Table 8). The remarkable decline in government influence on bank locations consists with the quantitative results in the early section of the paper.

CONCLUSIONS

This study indicates that in a less developed region of China, locations of bank branches were geographically centralized during the study period. Many new branches were established throughout Henan Province, and regional banking networks became denser and more complex. These new bank branches were concentrated in central cities, particularly in the cities of fast growth regions. Consequently, urban centers came to dominate the regional banking system. In terms of new branches of the four big SOBs, the proportion of these cities in the provincial total increased from 30.2 per cent in 1951~1978 to 68.3 per cent in 1993~2003. Within the provincial capital city of Zhengzhou, however, the changing spatial patterns of the banking system tended to accompany geographical expansion of the urban area.

Empirical evidence from the study reveals some differences to the stage process described by Chick (1986) and Dow (1999). Firstly, the regional banking system started from the spread of national bank branches, rather than local or regional banks. In the early stage of banking development (1949~1978), the national branch banking service was fairly evenly distributed in Henan Province. Secondly, the dramatic institutional reforms rapidly transformed the banking system. Several local or regional banks, such as city commercial banks, joint stock banks and private banks, were established. Under the increasing competition, profit-seeking was elevated as the main operational logic of SOBs. Geographically, this process was accompanied by the concentration of banking services in urban centers. Therefore, we argue that the different banking practices in the specific circumstances may extend the stage theory of banking development. We also argue that the tendency of spatial evolution in a regional banking system rests on its geographical scale. For example, the changing trends between Henan Province as a whole and its capital city showed a marked contrast during the same period. Thus, we should be cautious in drawing conclusions on the spatial evolution of banking system without consideration of the scale of a region.

Evidence from this study lends supports to the crucial role of institutions and institutional reforms in shaping the regional banking system. During the planned-economy period, banks were actually government departments. Thus, the number of bank branches in a prefecture was closely related to the number of administrative units in a prefecture in Henan Province. The geography of the banking system during this period resembled the geography of the hierarchy of government structure. Along with the transition to a market economy, particularly the government deregulation and the bank's institutional reforms, the SOBs have been gradually converting into commercial financial institutions. Their locations have therefore been guided by market principles. Empirical data from our interviews with 58 bank branches in Zhengzhou indicate that "government decisions" were a significant locational factor in 1951~1978, but had only weak influence thereafter. By contrast, factors related to financial markets, such as "resident's income level" and "proximity to big companies, government and non-government organizations" started to exercise their strong influence only after China's reforms in 1978. The remarkable changes in the effects of locational factors have been further proved by a quantitative analysis. By using the pooled OLS and Fixed Effect models and statistical data in Henan Province, we have demonstrated that the administrative units failed to be a significant locational factor in 1985~2003. Instead, regional GDP had a strong influence on spatial patterns of the banking system during the period. This was shown at highly significant statistical levels. In other words, regional GDP replaced regional administration units as an important locational factor after the reforms, while beneath this replacement lay government deregulation and the banks' institutional reforms. The findings provide comparison with other studies that attribute information flows as the determinant factors of China's national financial centers (Zhao at al., 2004).

Not surprisingly, rapid institutional changes produced many striking changes in the regional banking system in China. The most noticeable one is that numerous bank branches were established in a short period. For example, 1,599 new branches of the four big SOBs mushroomed in 1986~1992 in Henan Province, and 82 new branches were added to the city of Zhengzhou alone in 1993. After a period of fast growth, the restructuring of banking system should follow normally. But we have not seen this sign in terms of spatial shift of bank branches. In the interviews with senior officials of Henan branches of the four banks, we were told that their business focus was moving from the entire province to some target cities. They have planed to relocate some branches in these target areas (due to the rigorous process

in approving a new bank branch, they would prefer relocation of the branches that are not profitable rather than closure). Therefore, it is expected that the restructuring of banking system will occur soon.

This study only draws on evidence from the four big SOBs. Obviously this is only one part, albeit the main part, of the regional banking system. Other banks including the joint-stock banks, private banks, and city commercial banks have been growing rapidly in recent years. Along with the operation of foreign banks in China's inland areas from the end of 2006, the SOBs will be facing stronger competition. The regional banking system in the inland areas is expected to be more complicated in the near future.

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